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Measurement of indoor radon concentration in the premises of the Faculty of Science, University of Colombo

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A comprehensive study was carried out to determine if indoor radon concentration levels in the premises of Faculty of Science, University of Colombo, are within the levels recommended by the United States Environmental Protection Agency (EPA) and the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). Different locations were chosen including laboratories, office rooms, lecture rooms and air conditioned rooms. Alpha particle spectrometry was used to calculate the radon concentrations.

At each sampling location, a dust sample was collected by pumping air through a filter paper using a regulated air sampler. Alpha particle spectrometry on the dust sample was carried out using an alpha spectrometer equipped with a CANBERRA's passivated implanted planar silicon (PIPS) detector. The radon activity concentration at the sampling location was calculated using the alpha activity of the radon daughter Po-214 which emits an alpha particle of energy 7.68 MeV.

The activity concentrations varied from 5.78 x 10^{-2} Bq m^{-3} to 9.6 Bq m^{-3}. The EPA recommended value for the maximum indoor radon concentration is 148 Bq m^{-3} (4000 pCi m^{-3}) whereas the UNSCEAR recommended activity concentration for masonry buildings in temperate climatic countries is 1350 Bq m^{-3}. None of the radon activity concentrations measured in this study exceeded either of the recommended levels.

Keywords: Alpha particle spectrometry, indoor radon, activity concentrations, recommended level, Po-214

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